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ENTOMOLOGICAL NEWS

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A Third Species of Eusiphona, with Remarks on the Systematic Position of the Genus (Diptera, Milichiidae)

By CURTIS W. SABROSKY, Entomology Research Branch, Agricultural Research Service, United States Department of Agriculture

For more than a half century the peculiarly distinctive genus *Eusiphona* Coquillett, originally described in the Tachinidae and subsequently recognized as an acalypterate of the family Milichiidae, was known from a single species, *E. mira,* described in 1897 by Coquillett. In 1953 (Ent. News 64: 38), the writer described a second species, *E. flava,* easily distinguished from *mira* by its orange-yellow color. Recently a third species, unusually significant in structural features, was reared by Kenneth W. Cooper in the course of his interesting studies, particularly by means of trap nests, on the biology of the eumenine wasp *Ancistrocerus antilope* (Panzer) (1953, Trans. Amer. Ent. Soc. 79: 13–35).

Dr. Cooper has kindly furnished the following information, which is, I believe, the first clue to the habits of *Eusiphona.* The trap nest, number 83, was placed out on June 30, 1952, about one foot above the ground in a stone wall, and was picked up on August 14 of the same year, after it had been sealed by *Ancistrocerus.* "It was an unusual nest, for cells 1–5 (in order of formation) were those of a megachilid bee. Cell 6, the last provisioned cell, contained an *Ancistrocerus antilope* larva that emerged as a mature female May 3, 1953. The nest was opened at that time, and the leaf fragments of the leaf rolls of the mega-

chilid bee were interpenetrated by the milichiid puparia. Flies that had emerged in the nest had, of course, been unable to exit from it because of *A. antilope's* posterior mud wall that was plastered over the leaf roll of megachilid cell 5. Unemerged puparia were removed, and some flies emerged from them in a vial. All bees had perished." These data do not furnish definite information on the habits of the larvae of *Eusiphona,* but it appears that they are in some way associated with the megachilids.

Key to the Species of Eusiphona

1. Entirely black in ground color; mesopleuron bare, rarely with one or two short and inconspicuous setae near posterior margin; widespread (Maine to Fla., Vera Cruz, Calif., and Wash.) ..... *E. mira* Coq.
   Not entirely black, at least the legs and antennae in part, and the palpi, orange-yellow ..... 2.
2. Thorax, abdomen, coxae and femora black; mesopleuron with conspicuous bristles and setae along posterior margin (N. Y., Ohio) ..... *E. cooperi,* new species
   Thorax except disk of mesonotum and scutellum, and abdomen and legs entirely, yellow to orange-yellow; mesopleuron bare (Utah) ..... *E. flava* Sabr.

Eusiphona cooperi, new species

Like the genotype, *E. mira* Coq., in habitus and structural characters, but with palpi, antennae in part, tibiae, and tarsi orange-yellow.

Male.—Black, as in *E. mira,* only the palpus, narrow apical margin of second antennal segment, basoventral half to three-fifths of third segment, and all knees, tibiae and tarsi yellow to orange-yellow. Front velvet black in most aspects, dull dark brown pollinose; anterior half of parafrontals and entire face whitish pollinose. Thorax and abdomen subshining, but dark brown pollinose. Halter dark brown to black. Wing brown.

Head in profile as in *E. mira* (cf. Curran, 1934, Families and Genera of North American Diptera, p. 335, fig. 12), each segment of proboscis slightly longer than height of head. Thorax as in *mira,* but mesonotal bristles appearing proportionately

longer and stronger, and mesopleuron along posterior margin with several strong, conspicuous bristles and a few coarse setae. Wing venation essentially as in *E. flava,* differing from that figured for *mira* (Curran, l.c., p. 335, fig. 5) as follows: Subcostal break in costa fairly strong, diagonal, with basal portion of costa slightly superimposed as a lappet, nearly as well-developed as in *Milichiella;* anterior crossvein directly behind the subcostal break in costa, the penultimate section of fourth vein two-thirds as long as that of third vein; first posterior cell only slightly broadened opposite the hind crossvein, and not so strongly narrowed distally, the third and fourth veins at the costa separated by a distance equal to length of small crossvein.

Female.—As described for the male, but more brightly colored, the pollinosity of thorax light grayish brown, and the front yellowish-gray pollinose in all aspects; third antennal segment more extensively orange-yellow, only a narrow dorsal margin black; second antennal segment predominantly orange-yellow; knob of halter yellowish; wing membrane only slightly browned.

Length, 3–3.5 mm.

Holotype male, *allotype,* and eight *paratypes* (2 males, 6 females), Rensselaerville, New York (K. W. Cooper); paratype male, Wauseon, Ohio, Aug. 21, 1902. Type No. 62565 in the U. S. National Museum, the type series deposited by courtesy of the collector. The type and allotype are on one mount together with two female paratypes and four puparia.

The habitus of *cooperi* immediately suggests the well-known *E. mira.* Indeed the Ohio paratype has long stood in the collection under that name, and all series of *mira* should be reexamined for the new species. Besides the color differences, the presence in *cooperi* of strong mesopleural bristles will distinguish it at once from *mira.* Actually, a few *mira* with mesopleural setae have been seen. Examination of the thirty-one available specimens of *mira* gave the following results: In 25, the mesopleura were entirely bare; in three females, a short seta was present on each mesopleuron near the posterior margin; in two females, two setae were present on one side and one on the other; and in one male, two setae were present on each side.

All setae are short and dark, and thus inconspicuous and easily overlooked.

The presence of strong mesopleural bristles is an interesting feature which will require modification of some existing generic keys. The combination of a rather strong costal excision and mesopleural bristles would ordinarily serve to place *cooperi* as a species of *Pholeomyia* Bilimek, although the general habitus, wing venation, and above all the unusually elongate, slender, geniculate proboscis associate it readily enough with *Eusiphona*. In both costal and mesopleural characters, therefore, *cooperi* appears to connect the genera *Pholeomyia* and *Eusiphona*. The latter may have developed from the former by unusual development of the proboscis and reduction (in all but *cooperi*) of the mesopleural bristles.

From the close structural relationship of *Eusiphona* and *Pholeomyia*, it is clear that the former belongs in the Milichiinae near *Pholeomyia* and *Milichia*, as already recognized by Hennig (1939, Arbeiten Morph. Taxon. Ent. 6:85), and not in a different subfamily as given in most available keys and in the recent edition of "Classification of Insects" by Brues, Melander and Carpenter (1954). Its position has probably not been recognized because the genotype and long the only known species, *E. mira*, has a very weak costal excision. *Eusiphona flava*, the second described species, has it only slightly stronger. The excision is most distinct in the present species, which is thus more obviously related to the Milichiinae.

In some species of *Pholeomyia*, the proboscis is slender, elongate and geniculate, somewhat as in *Eusiphona*, and thus neither proboscis nor mesopleural bristles are completely useful characters for separating the two genera. However, they may be distinguished by the following features:

Orbital bristles numerous, the anteriormost few medioclinate, the remainder reclinate; third and fourth veins converging, the apical cell more or less strongly narrowed ..... *Eusiphona* Coq.

Each orbital row with median proclinate bristle, orbitals below it medioclinate, those above reclinate or lateroclinate;

third and fourth veins approximately parallel, not or almost imperceptibly converging, the apical cell not narrowed.....*Pholeomyia* Bilimek

All three species of *Eusiphona* have the postvertical bristles approximately parallel, as do many species of *Milichiella* and *Pholeomyia*. Nevertheless, in some keys (e.g., Brues, Melander and Carpenter, 1954, op. cit., p. 384), the Milichiidae are said to have convergent postverticals, as distinguished from the Carnidae with parallel postverticals. The writer does not believe that these two can be maintained as distinct families. Incidentally, Brues, Melander and Carpenter repeat the error of their first edition in referring *Rhodesiella* to the Carnidae. It is a characteristic genus of Chloropidae, particularly widespread in the Ethiopian and Oriental regions.

A New Venezuelan Terthrothrips (Thysanoptera: Phlaeothripidae)

By Lewis J. Stannard, Jr., Illinois State Natural History Survey, Urbana.

Terthrothrips was erected by Karny in 1925 for the Brazilian species *sanguinolentus* (Bergroth). Since then 13 more species have been added, the majority tentatively assigned to this genus by Hood in 1954. Herein is described another species, collected by Dr. Whitcomb from Venezuela. All known representatives of *Terthrothrips* are from South America. These thrips are members of the tribe Glyptothripini Priesner and of the subfamily Phlaeothripinae.

In most ways *Terthrothrips* resembles *Eurythrips* s. str. In each of these genera, the head is fairly smooth, at least the central dorsal portion of the head is not strongly reticulate; in each the prothoracic epimeral sutures are incomplete; and in each the post ocular setae are well developed. *Terthrothrips*, in general, has a longer tube than do species of *Eurythrips*, and the antennae are much longer than the antennae in *Eurythrips*.

Recently, while in Egypt, under the auspices of the John Simon Guggenheim Memorial Foundation, I studied the type species of *Terthrothrips, T. sanguinolentus,* in Professor Doctor H. Priesner's collection. The holotype is a male and like all males of the tribe Glyptothripini and most males of the subfamily Phlaeothripinae, the lateral posterior pair of setae on abdominal tergite IX are reduced and spine-like.

In my opinion the new species, *magnicauda,* is a true congener of *sanguinolentus.*

Terthrothrips magnicauda new species

This is the only species so far assigned to the genus which has the tube longer than the head.

Female (macropterous). Length, distended, exclusive of the antennae, about 2.5 mm. General color yellowish with the following regions brown: head, except at base; prothorax; posterior part of mesoscutum; all coxae and bases of femora; and most of abdominal segments IX and tube (X). Antennae grey-brown except segment I which is concolorous with head, and except apex of II and bases of III and IV and sometimes V which are yellow. Wings greyish brown. Body with much red subintegumental pigments.

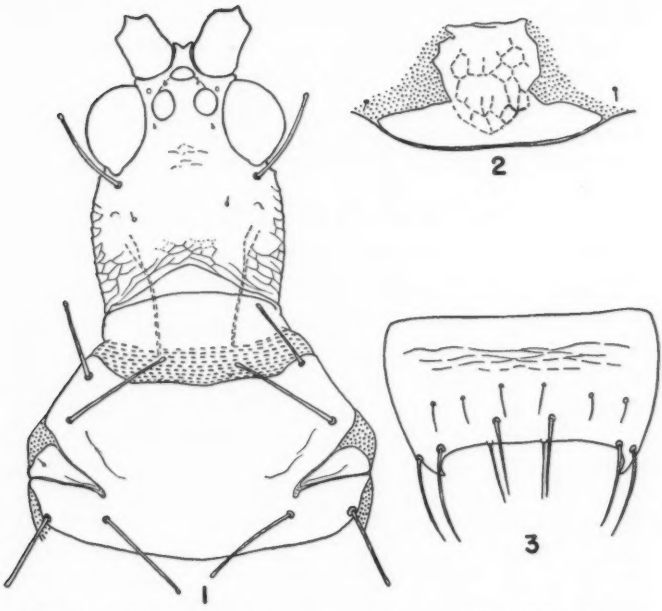
Head, fig. 1; post ocular setae long and dilated at tip.

Prothoracic epimeral sutures incomplete, fig. 1; prothoracic anteromarginal setate minute; prepectus present; mesopresternum well developed; fore tarsi each with a small tooth.

Pelta, fig. 2; wing-holding setae not flattened; abdominal sternum VIII with an additional middle pair of posterior setae, fig. 3; major posterior setae of abdominal tergites IX longer than tube; tube non-reticulate, longer than the head.

Male. Unknown.

Holotype: Female, Rancho Grande, near Maracay, VENEZUELA, March 1953; (Dr. Willard H. Whitcomb), from fallen leaves. *Paratypes:* 2♀; same data as for holotype. Types deposited in the collections of the Illinois Natural History Survey.



Terthrothrips magnicauda new species, female. Fig. 1, dorsal aspect of head and prothorax; fig. 2, pelta, the median sclerite of abdominal tergite I; fig. 3, abdominal sternum VIII.

Nomenclature Notice

All comments relating to the following should be marked with the file number and sent to Francis Hemming, 28 Park Village East, Regent's Park, London N.W. 1, England.

Oxypoda Mannerheim, 1831 (Class Insecta, Order Coleoptera), designation of *Oxypoda spectabilis* Maerkel, 1844, as type species of, to validate current usage (pp. 176–178) (File: Z.N. (S.) 443).

For details see: Bull. Zool. Nomencl. Vol. 11, Part 6.

Revision of the Neotropical Acanthocinini (Coleoptera: Cerambycidae) I. The genus Canidia and its allies

By LAWRENCE S. DILLON

(*Continued from p. 149*)

PSEUDOCANIDIA Dillon, gen. nov.

Type of genus: *Pseudocanidia cuernavacae* Dillon, spec. nov.

Moderate-sized, slender, subdepressed beetles. Head impunctate, except on vertex between upper lobes of eyes; front parallel-sided except below eyes, where it is rather strongly narrowed, distinctly covex, one-fifth wider than high; eye with lower lobe oblong, erect, subequal to gena in height, isthmus rather narrow, upper lobe feebly wider than isthmus, strongly arcuate; antennal tubercles robust, distinctly divergent apically. Pronotum one-fourth wider across lateral tubercles than long, but distinctly longer than width of base, the sides being somewhat narrowed on basal fourth; lateral tubercles small but evident, armed at basal third of pronotum with a rather long, straight, oblique tooth or short spine; transverse sulci wanting; disk with three conspicuous tubercles, the median one slightly more prominent, entire surface finely, uniformly, and densely punctate. Elytra with basal gibbosity small, made prominent by a pronounced cariniform crest; disk fairly densely covered with rather fine punctures, which are somewhat denser on basal fourth, with two or three costae, one along edge of declivity, the remainder variable in position, often especially prominent just behind base near humerus, basally with a few flying hairs; apices separately, acutely rounded or strongly obliquely truncate. Prosternal process about one-seventh as broad as a procoxal cavity; mesosternal process nearly twice as broad as that of the prosternum, posteriorly feebly expanded. Fifth abdominal sternite one-third (in male) to one-half (in female) again as long as fourth, apex truncate in female, triangularly emarginate in male Legs successively much longer from front to rear, the front ones quite short; femora strongly clavate, but

to a lesser degree in female, metafemora attaining apex of fourth sternite in female, middle of fifth in male; metatarsi with first segment equal to next two combined. Antennae slightly longer than body in female, up to one-third again as long as body in male, beneath with isolated fringing hairs on first two or three segments; scape slender, elongate, nearly attaining pronotal base in both sexes, gradually thickened to apical third, thence nearly parallel-sided to apex, not flattened nor carinate, but before apex ventro-laterally broadly constricted, apical process prolonged, more less broadly and obtusely triangular; third segment arcuate (in profile), slightly longer than first; remaining segment successively shorter.

Remarks: This genus is closely related to *Canidiopsis* but is at once distinct in the form of the antennal scape. Here that organ is neither carinate nor flattened beneath, being cylindrical throughout, but before its apex ventro-laterally it is broadly constricted or emarginate. In addition the body form is more elongate, the pronotal disk is distinctly trituberculate and finely, densely punctate throughout, the metafemora are more elongate, the fifth sternite is more elongate in both sexes but especially in the male, the lower ocular lobe is oblong and subequal to the gena, the elytra are distinctly carinate, and the shape of the apical process on the scape is different. In addition, the elytral apices are separately rounded or strongly, obliquely subtruncate at suture.

Pseudocanidia cuernavacae Dillon, spec. nov.

Male. Piceous, densely covered with hoary pubescence, strongly tinged with olivaceous. Head on front, antennal scape, femora, tibiae, and abdomen strongly, coarsely mottled with dark brown; sterna indistinctly so. Pronotum medially with a gray-brown area, which is somewhat expanded on anterior third, the basal two-fifths margined with fuscous, the median line hoary, nearly entire; sides below lateral tubercles indistinctly tinged with gray-brown. Scutellum near each side with a rather broad, oblique, fuscous vitta. Elytra extensively tinged with olivaceous, except on and behind humerus and on basal

gibbosity; a little behind middle with an inverted, indistinct, hoary-gray, V-shaped marking which in great part encloses an irregular fuscous macula; disk with four linear series of minute fuscous maculae, that along suture most closely spaced, but for the most part the maculae are quite widely separated, with about 6 to 15 to a row. Tarsi entirely hoary. Antennae with third segment imperceptibly mottled with brownish, very narrowly annulate with dark brown at apex; segments wanting from fourth.

Entire upper surface minutely punctulate. Head with front one-fifth wider than high, parallel-sided above, distinctly narrowed below eyes, feebly convex, impunctate; eye with lower lobe oblong-ovate, erect, one-fifth again as tall as gena. Pronotum about one-fifth again as wide across lateral tubercles as long, distinctly narrowed on basal fourth; lateral tubercles situated at basal third, feebly elevated, armed with a rather long, slender, obtuse tooth that is directed slightly caudad; disk with three moderate-sized, rounded, prominent tubercles, the posterior one a little more strongly elevated than the others, entire surface uniformly, densely, finely punctate. Elytra with basal gibbosities rather feeble, provided basally with a coarse, strongly prominent, bituberculate carina; disk covered with very regularly spaced, moderate-sized punctures, except on anterior part of humeri, the punctures gradually finer and less distinct behind middle, obsolete on apical fifth, with two feeble carinae on apical two-thirds; apices strongly obliquely subtruncate, the angles rounded, not prominent. Metafemora extending about to middle of fifth sternite, strongly clavate. Antennae one-fourth to one-third longer than body, with a very few long setae; scape nearly attaining base of pronotum, slender, the apical process not very prominent, triangular, with its apex broadly rounded; third segment feebly longer than scape, arcuate; rest gradually shorter.

Female. As male but metafemora only reaching to apex of fourth sternite, rather slender; antennae feebly longer than body.

Length 7.7–11.3 mm.; width 1.8–3.0 mm.

Holotype male and *allotype* female; Cuernavaca, Mexico [USNM]. *Paratypes:* 5; Cuernavaca, Mexico [USNM]. 1; Cuernavaca, Mexico, Aug. 7, 1938 [LL]. 1; Cuatha, Morelos,

Mex., July 28, 1938 [LL]. 1; Chilpancingo, Guerrero, Mex., 4,000 ft. [AMNH].

Remarks: The distinct dark patch on the pronotal disk, outlined with fuscous basally, the fine, dense punctation of the entire pronotum, the maculation of the elytra, and the lack of basal annulations on the antennae will serve to distinguish this species.

CANIDIOPSIS Dillon, gen. nov.

Type of genus: *Canidia mexicana* Thomson.

Moderate-sized, subcylindrical beetles. Head impunctate; front distinctly narrowed between eyes, below eyes sides slightly constricted to mouth, usually strongly covex; eyes with lower lobe oblong, erect, one-fourth or so taller than gena, upper lobes narrow, scarcely wider than isthmus, separated by more than three times their width; antennal tubercles robust, not very prominent, strongly divergent apically. Pronotum from one-eighth to nearly half again as wide across lateral tubercles as long, narrowed on basal fourth; lateral tubercles small, not prominent, located at basal third or two-fifths, ending in a long, slender, oblique tooth; transverse sulci wanting; disk feebly trituberculate, the tubercles low and small, the median one more prominent than the others, entire surface sparsely, irregularly punctate. Elytra with basal gibbosity feeble but evident, armed with a rather robust, cariniform process that sometimes bears low tubercles; disk entirely punctate, the punctures simple, confused, not dense, with two or three more or less distinct, abbreviated or interrupted costae; the basal crest and often much of disk sparsely sprinkled with long, flying hairs, those on base long and denser; apices broadly, subobliquely truncate, the angles not produced; humeri prominent, rounded, often impunctate. Prosternal process about one-seventh as wide as a procoxal cavity, simple; mesosternal process about twice as wide as the prosternal, posteriorly feebly expanded. Fifth abdominal sternite in male slightly longer, in female much longer, than fourth. Legs successively longer from front to rear, the forelegs quite short, the hind ones long; metafemora extending at least near apex of fourth sternite; protarsi dilated in male, metatarsi with first segment feebly longer than next two in both

sexes. Antennae slightly longer than body in female, one-fourth or one-third longer in male, with a very few long hairs beneath on basal segments; scape reaching to or slightly behind basal third of pronotum, slender, gradually thickened apically, ventrolaterally with two low carinae bordering a flat area, apical process broad, parallel-sided, its apex broadly subtruncate; third segment subequal to first, especially in male, often distinctly longer than it in female; rest decreasing in length.

Remarks: From *Canidia* this genus is distinct in having the elytral apices broadly truncate, in the shorter metafemora, and in having the elytra bearing a cariniform crest at base. From *Dectes* it is most distinct in having this crest and in lacking almost all flying hairs on elytra, except notably at base, as well as in the form of the antennal scape and in the trituberculate pronotal disk.

Key to Species

1. Antennae and legs devoid of mottling of any sort; entire body uniformly covered with clear pale gray pubescence ..... *canescens*
   Antennae and legs at least indistinctly mottled with brown or fuscous; body not entirely bright gray pubescent..... 2.
2. Elytra dull ashy pubescent, varied with white and finely peppered with fuscous, the white forming an inverted chevron near middle of each disk and often another behind base..... *mexicanus*
   Elytra entirely dull ashy or brown-ashy pubescent, not peppered with fuscous and devoid of white pubescence; rarely an indistinct inverted chevron of pale ashy near middle... 3.
3. Antennae, femora, and tibiae distinctly mottled with fuscous; elytra usually brown ashy..... *similis*
   Antennae, femora, and tibiae with scarcely visible brown mottling; elytra dull ashy gray pubescent..... *hebes*

Canidiopsis mexicanus Thomson

Canidia mexicanus Thomson, 1860, Class. Cerambycides, p. 14.
Dectes mexicanus Thomson. Bates, 1881, Biol. Centr. Amer., Col. V, p. 174 [*ex parte*].

Male. Fuscous, densely covered with bright ashy pubescence, strongly clouded with olivaceous or dark brown on pronotal

disk and elytra. Head on front and behind eyes, antennal scape, and third segment, body beneath, and legs (except tarsi) heavily mottled with dark brownish; remaining antennal segments and tarsi faintly mottled with lighter brown. Pronotum often with median line narrowly ashy, usually much interrupted. Elytra sprinkled all over with whitish points, arranged in an inverted V at middle and often forming short linear series on apical third, especially along suture. Antennae with apical thirds of segments beginning with third, and basal fourths of fourth and following segments, fuscous annulate.

Entire upper surface minutely punctulate. Head with front one-tenth wider than high, strongly tumid, impunctate; eye with lower lobe distinctly taller than gena, oblong, erect. Pronotum one-third again as broad across lateral tubercles as long, slightly narrowed on basal fourth; lateral tubercles quite small, placed at basal third, armed with a long, slender, acute tooth that is directed obliquely posteriorly at about a 45° angle with sides; disk with three small, low tubercles about equal in size and elevation, entire surface irregularly covered with moderate-sized punctures, which are denser medially and on extreme sides, sides devoid of punctures below lateral tubercles. Elytra with basal gibbosity moderately prominent, with a low, broad crest, which may bear a few indistinct granules; disk deeply, rather coarsely and densely punctate, the punctures denser immediately behind basal gibbosity than on basal fourth, becoming slightly finer apically but distinct nearly to extreme apex, with two poorly defined costae on apical third; apices somewhat variable, broadly subtruncate or slightly obliquely, broadly truncate, the external angle rounded or somewhat prominent. Metafemora nearly attaining apex of fifth sternite; fifth sternite longer than fourth, its apex broadly, triangularly emarginate. Antennae one-third again as long as body, the sixth segment nearly attaining elytral apex, with one or two fringing hairs beneath on first few segments; scape extending almost to basal margin of pronotum, slender, slightly clavate to apical third, then tapering to apex, apical process broad, broadly truncate at tip; third segment subequal to first, arcuate; fourth and fifth successively much shorter, rest gradually diminishing in length.

Female. More robust than male; metafemora scarcely surpassing apex of fourth sternite; fifth sternite tapering apically, nearly as long as preceding two together, apex squarely truncate; antennae scarcely longer than body, scape attaining basal fourth of pronotum, distinctly shorter than third.

Length 9.5–11 mm.; width 3–3.6 mm.

Type locality: Mexico. Distribution: Mexico. Mexico: 14; Cuernavaca (Wickham) [USNM; LL]. 1; Tamazunchale, San Luis Potosi, May 20, 1952 (Cazier, Gertsch & Schrammel) [AMNH]. 1; Jacaba, Hidalgo, Vulgll, 1939 [LL]. 1; Ixmiquilpan, Hidalgo, July 12, 1939 [LL].

Remarks: From its congeners this species may be distinguished by the irregular punctation of the pronotum, by the low, weakly crested elytral basal gibbosity, by the elytra being more densely punctate behind basal gibbosity than on basal fourth, and by these organs being sprinkled with white flecks, some of the flecks forming an inverted 'V' and several apical lines.

Canidiopsis similis Dillon, spec. nov.

Male. Fuscous, densely covered with dull brown-ashy or olivaceous ashy pubescence. Head on front, antennal scape, femora, and sometimes tibiae, strongly mottled with dark brown. Antennal third segment, body beneath, and usually tibiae indistinctly brown-mottled. Pronotum on middle of disk with a vague, dark brownish, quadrate patch, sometimes wanting. Scutellum indistinctly tinged with brownish. Elytra nearly uniformly pubescent, sometimes very faintly sprinkled with widely separated brown flecks and medially often with a scarcely discernable inverted 'V' of slightly whiter pubescence. Antennal segments from third with apical fourths or thirds fuscous annulate, the bases of fourth and following segments rather narrowly semi-annulate with fuscous.

Entire upper surface minutely alutaceous. Head with front one-tenth wider than high, nearly parallel-sided except below eyes where it is strongly narrowed, distinctly tumid, impunctate; eye with lower lobe nearly one-fourth again as tall as gena, ob-

long, erect. Pronotum nearly one-half again as wide across lateral tubercles as long, basal fourth feebly narrowed; lateral tubercles placed at basal two-fifths, prominent, armed with a long, robust, strongly recurved tooth; disk with three small, rather indistinct tubercles, the median one a little more prominent, surface irregularly, moderately densely punctate, the punctures fine, somewhat more closely placed on basal sixth, nearly entirely wanting on sides of disk and on extreme sides apically and below lateral tubercles. Elytra with basal gibbosity feebly prominent, elongate, with a prominent, robust, cariniform crest which is usually devoid of tubercles; disk moderately finely punctate, the punctures not densely placed, a little more close-set behind basal fourth in an area along suture to about middle of length, with one or two quite faint costae apically; apices broadly, obliquely truncate at suture, the outer angle sometimes slightly prominent. Metafemora attaining middle of fifth sternite, which is scarcely longer than fourth and broadly emarginate at apex. Antennae about one-third again as long as body, the seventh segment nearly attaining elytral apex, very sparsely fringed beneath with long hairs on first four segments; scape extending to basal third of pronotum, apical process broad, parallel-sided, its apex squarely truncate; third segment strongly arcuate, as long as first; fourth to sixth segments successively much shorter, the remainder gradually diminishing in length.

Female. Metafemora scarcely surpassing apex of fourth sternite; fifth sternite half again as long as fourth, its apex broadly truncate. Antennae scarcely shorter than in male, the third segment longer than the first.

Length 9.5–13 mm.; width 2.8–4.3 mm.

Holotype male and *allotype* female; Cuernavaca, Morelos, Mexico [USNM]. *Paratypes:* 5; topotypic [USNM]. 4; Jacala, Hidalgo, July 4–18, 1939 [LL]. 1; topotypic, Aug. 7, 1938 (L. J. Liporski) [LL]. 1; Acapulco, Mex., June 22, 1935 (M. Cazier) [AMNH]. 1; Mexico [CAS].

Remarks: From *C. mexicanus* to which this species is very closely related, it is distinct in having the pubescence of the elytra nearly entirely uniformly brown-fulvous pubescent, lack-

ing all traces of whitish pubescence except sometimes for a faint inverted chevron which is present at the middle of each elytron. Moreover, the denser punctation of the elytra is confined to a narrower area behind the basal gibbosity along the suture; the basal gibbosity is less prominent and is armed with a narrower, more prominent crest. In addition, the spine of its pronotal lateral tubercles is more robust and more strongly arcuate posteriorly.

Canidiopsis canescens Dillon, spec. nov.

Dectes mexicanus form *a* Bates, 1881, Biol. Centr. Amer., Col. V, p. 174, pl. 13, f. 6 [*ex parte*].

Female. Piceous, densely and uniformly covered with bright gray pubescence. Antennae with apices of third and following segments fuscous annulate, the annulation distinctly broader on segments 3–5, the bases of all segments from fourth narrowly semi-annulate with fuscous.

Head with front about one-fourth again as wide as high, slightly narrowed above between eyes and strongly so below toward mouth-parts, strongly tumid, impunctate; eye with lower lobe oblong, erect, one-fourth again as tall as gena. Pronotum two-fifths again as wide across lateral tubercles as long, basal fourth feebly narrowed; lateral tubercles feebly elevated, ending in a long, slender, slightly arcuate tooth, placed at basal third; disk tribuberculate, the median tubercle more prominent than the others, which are subobsolete, unevenly, finely punctate, the punctures a little denser toward base. Elytra with basal gibbosity feebly elevated, provided with a rather broad, untuberculated, cariniform crest that is very slightly arcuate; disk rather coarsely, sparsely punctate, the punctures absent from humerus, becoming finer but not denser to middle, thence to apex becoming still finer and denser as well; apices broadly, arcuately, and obliquely truncate at suture. Metafemora extending scarcely beyond apex of fourth abdominal sternite; fifth sternite about half again as long as fourth, its apex broadly truncate. Antennae about one-fifth longer than body, the eighth segment slightly surpassing elytral apex, with a very few long, flying

hairs beneath on first and third segments; scape attaining basal fourth of pronotum, feebly thickened to apex, apical process broad, parallel-sided, the apex squarely truncate; third segment nearly straight, as long as first; fourth and fifth successively much shorter; rest gradually diminishing in length.

Length 14 mm.; width 4.4 mm.

Holotype: Female; 3 mi. South of Tepic, Nayarit, MEXICO, Oct. 5, 1950 [USNM]. *Paratypes:* 1; Oropes, Mexico, Aug. 1945 (W. F. Foshag) [AMNH]. 5; Mezcala, Guerrero, June 29, 1951 (H. E. Evans) [CU].

Remarks: This species is closely related to *C. hebes* but is distinct in being uniformly bright gray pubescent; the elytral punctation does not become any denser until behind middle, the punctures being gradually finer from base to apex.

Canidiopsis hebes Dillon, spec. nov.

Male. Piceous, smoothly covered with dense, fine, short, dull ashy or rarely brownish ashy pubescence. Antennae gray pubescent, apices of segments strongly fuscous annulate from third segment, the third to fifth more broadly so, and the extreme apices of all segments distinctly edged with gray, the bases of segments from fourth quite narrowly fuscous semiannulate.

Entire upper surface densely, minutely alutaceous. Head with front one-fifth again as wide as long, strongly tumid; eye with lower lobe oblong, scarcely taller than gena. Pronotum one-fourth again as broad across lateral tubercles as long; lateral tubercles small but prominent, placed at basal two-fifths, armed with a slender, arcuately retrorse spine; disk with three tubercles, the median one larger and much more prominent, moderately finely, quite sparsely punctate; sides before tubercles punctate as disk, behind with a single row of punctures, and below those structures entirely devoid of punctation. Elytra with basal gibbosity having a subcariniform, elongate, slightly prominent crest; disk (but humeri impunctate) less densely but much more coarsely punctate than pronotum, the punctures denser behind basal gibbosity to apex, scarcely finer apically,

each with three rather indistinct costae, the two inner ones entire, the outer one variable, sometimes wanting; apices broadly, rather strongly obliquely truncate, the angles not produced. Metafemora reaching nearly to apex of fifth sternite, about equal to mesofemora in robustness. Antennae one-half again as long as body, with one or two long fringing hairs beneath on first two or three segments; scape attaining basal fifth of pronotum, apical process broad, parallel-sided, squarely truncate at apex; third segment scarcely longer than first, broadly arcuate, fourth, fifth, and sixth successively strongly shortened, remaining ones feebly so.

Female. As male but fifth sternite about half again as long as fourth; the metafemora attaining the apex of fourth sternite; antennae about one-third longer than body.

Length 11–13 mm.; width 3.3–4.0 mm.

Holotype male and *allotype* female: Cuernavaca, Mexico [USNM]. *Paratypes:* 2; topotypic [USNM]. 1; Joyutha, Morelos, Mexico, Aug. 1903 (W. L. Tower) [AMNH]. 1; Guadalajara, Jalisco, 1901 (M. Dignet) [AMNH].

Remarks: In this species there is no maculation of any sort save the annulation of the antennae and the indistinct mottling of all the appendages. The antennal scape has the terminal process rather short but broad, parallel-sided, with its apex squarely truncate and flat. Moreover, the punctation of the pronotum and elytra is distinctive.

Incertae Sedis

The following species, if the description of the scape (reported as being apically spined) is accurate, probably represents a new genus. Unfortunately, it is not represented among the material at hand.

Dectes spinicornis Bates, 1882, Biol. Centr. Amer., Col. V, p. 174.

"Related to *D. mexicana* but more elongate and more parallel. Elongate, subcylindrical, briefly sparsely setose, gray-fuscous, peppered with fuscous. Elytra each with a macula toward apex of black fuscous (anteriorly obliquely curved), margined with

ashy. Antennae slightly longer than body, finely pilose; scape beneath at apex acutely spinose, before spine strongly sinuate. Thorax cylindrical, lateral spine straight, placed well behind middle, disk uneven. Elytra crebrosely punctate, apices separately, acutely rounded.

"Length 6 lines. Mexico (Sturm).

"It differs from *mexicanus,* besides its more cylindrical shape and the markings of the elytra, by the antennae being rather densely clothed to apex with short hairs, and by the narrower and more acute spine of the antennal scape, which is besides preceded by a deep sinuation in the under surface." (A copy of the original description.)

A Chamber for Studies of Site-Selection by Elateridae

By James B. Kring, The Connecticut Agricultural Experiment Station, New Haven 4, Conn.

In ecological studies on the choice of oviposition site by the eastern field wireworm (*Limonius agonus* Say) a need was discovered for a small, standard, easily cleaned oviposition chamber. Previously reported studies on the choice of oviposition site by adult click beetles have been made in soil flats and are not easily reproducible in the laboratory.

Rawlins (1937) indicated the satisfactory use of moist chambers in mating and oviposition studies. Dobrovsky (1953, 1954) has demonstrated the use of test tubes for similar studies of *Conoderus vagus* Candeze.

Lacroix (1934) used soil pans in studies on oviposition site selection by *Limonius agonus* Say. Gough and Evans (1942) indicated the use of soil boxes in studies of *Agriotes* spp.

No record was found in the literature of any small, standard, laboratory chambers being used in studies of oviposition site selection by elaterid beetles.

In 1952 and 1953 moist chambers were successfully used as oviposition chambers for adults of *Limonius agonus* Say. These

chambers were not satisfactory for choice of oviposition site studies and in early 1954 anaerobic Bray chambers were selected for use in these tests. This selection was based on their small size, their circular shape, the ease with which they could be cleaned, and their general availability to other workers. The raised barrier dividing the bottom of the dish provided the complete separation of two choice compartments. Olson (1946) obtained an average of 175 eggs per female for this species in moist chamber studies and in field studies. The average length of the oviposition period in the studies by Olson (1946) was about 28 days. In 1952 and 1953 an average of 194 eggs per female was obtained in moist chamber oviposition studies in this laboratory. The oviposition period in 1953 in moist chambers at 70°F. was 22 days.

Adults transferred from one anaerobic Bray dish to another laid an average of 124 eggs per female. In these Bray dishes the oviposition period at 70°F. was 29 days. It is easily seen that the number of eggs per female and the length of the oviposition period in the Bray dishes compares favorably to results obtained in other laboratory and field studies for this species.

The adults used in the laboratory were obtained in the fall from their pupation cells in the field. They were retained in cotton stoppered vials of moist soil at 45°F. constant temperature for 90 days before they were used in tests. Adults were then placed in Bray dishes, 2 males and 2 females to each chamber. Since it was difficult to separate males and females and since the proportion of sexes obtained by this collecting method was not always the desired ratio, in later studies the adults were placed in a group in a moist chamber with potato plugs moistened with honey and pollen for nine days before they were used in choice tests. Work in 1952 and 1953 indicated that at 70°F. under these test conditions no oviposition occurred until about eleven days after the insects were raised to 70°F. temperature. Dobrovsky (1954) has reported a better method of feeding adults. The method of adult feeding used in these tests was satisfactory since eggs obtained by this method when they were placed at 70°F. were 100% fertile.

Adult click beetles in the Bray dishes have shown definite preference for a number of conditions. This preference was indicated by recovery of eggs from the substrates tested. These eggs were recovered by the screening and salt flotation method (Rawlins (1937) and Olson (1946)). In test chambers where no choice was given random distribution of eggs was obtained. These results have been repeated.

Anaerobic Bray dishes were demonstrated to be satisfactory as mating and oviposition chambers of click beetles. They were demonstrated to serve in tests on oviposition site selection by these insects. It should be noted that these chambers were also used successfully in larval choice studies.

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Some Ticks from Iraq

By C. ANDRESEN HUBBARD, Tigard, Oregon

While collecting fleas in Iraq during a 1953 Fulbright assignment the writer secured the following ticks in this Middle East Arab State. These ticks are here listed alphabetically.

Boophilus calcaratus (Birula) 1894, in J. Wagner, Travaux de la Soc. Nat. de St. Petersbourg. Sect. Zool. et Physiol. 24 (2): 137 (in Russian).

Cattle (origin unknown), slaughterhouse, Baghdad, June 15, 20 females.

Haemaphysalis alderi Feldman-Muhsam 1951, Bull. Research Council Israel 1: 104.

Wild cat (*Felis chaus*), Baghdad, January 24, 2 females.

Haemaphysalis sp.

Kurd mole rat (*Spalax leucodon*), Sirsang (extreme northern Iraq, in mountainous Kurdistan). July 1, 7 nymphs. Peromyscus-like mouse (*Apodemus mystacinus*), Sirsang, July 1, 2 nymphs.

Hyalomma aegyptium (Linnaeus) 1758, Syst. Nat., p. 615.

Turtle, Shaklawa, July 13, 8 females.

Hyalomma excavatum Koch 1844, Arch. f. Naturg. 10: 221.

Rabbit (*Lepus babylonicus*), Baghdad, April 12, 1 larva. Man, 20 mi. w. Baghdad, April 15, 1 female. Cattle, slaughterhouse, Baghdad, June 15, 1 male, 7 females.

Hyalomma marginatum Koch 1844, Arch. f. Naturg. 10: 222.

Rabbit (*Lepus babylonicus*), Baghdad, April 12, 1 nymph. Cattle, slaughterhouse, Baghdad, June 15, 1 male, 20 females.

Hyalomma sp.

Rabbit (*Lepus babylonicus*) Baghdad, March 10, 16 nymphs, April 12, 1 nymph, May 30, 1 nymph; Hilla, April 24, 7 nymphs. Bat (*Asellia tridens*), Baghdad, May 30, 1 nymph. Gerbil (*Meriones* sp.), Salahaddin, July 7, 35 nymphs.

Ixodes sp.

Wild cat (*Felis chaus*), Baghdad, January 24, 6 nymphs.

Ornithodoros sp.

Trident leaf-nosed bat (*Asellia tridens*), Baghdad, May 30, 8 larvae.

Rhipicephalus sanguineus (Latreille) 1806, Genera crustaceorum et insectorum 1: 157.

Wild cat (*Felis chaus*), Baghdad, January 24, 5 males. Hedgehog (*Erinaceus auritus*), Baghdad, April 18, 5 females.

Gerbil (*Meriones crassus*), Ramadi, April 19, 1 female, 3 nymphs. Cattle, slaughterhouse, Baghdad, June 15, 1 female.

Rhipicephalus secundus Feldman-Muhsam 1952, Bull. Research Council Israel 2: 187.

Jackal (*Canis aureus*), Baghdad, March 25, 12 females. Rabbit (*Lepus babylonicus*), Baghdad, March 28, 27 females, April 12, 5 males; Hilla, April 24, 5 males, 6 females. Hedgehog (*Erinaceus auritus*), Baghdad, April 14, 5 females.

The writer is indebted to Glen M. Kohls of Hamilton, Montana and B. Feldman-Muhsam of Jerusalem for the above determinations. Kohls has retained for the collection of the Rocky Mountain Laboratory the specimens of *H. alderi, Rhipicephalus sanguineus,* and *R. secundus.* The remaining specimens are divided equally between the British Museum, Iraq Museum of Natural History, Baghdad, Iraq, the Academy of Natural Sciences of Philadelphia, and the U. S. National Museum.

Entomological Departments

Believing such material to be of interest to its readers, ENTOMOLOGICAL NEWS herewith solicits articles similar to the one here presented and giving information on the organization and activities of entomologists in colleges, universities, museums, and in government and other groups.

Rutgers University

In New Jersey, research, teaching, and extension work in entomology are centered in a single department in the College of Agriculture of Rutgers University, the State University of New Jersey. A staff of 16 technical men plus a varying number of teaching and research assistants is engaged in a wide range of research and teaching activities under the leadership of Dr. BAILEY B. PEPPER, Department Chairman.

This department was organized in 1888 under the Rev. GEORGE D. HULST. A year later he was succeeded by Dr. JOHN B. SMITH, who pioneered in mosquito control and studied many other insect pests. In 1912, Dr. THOMAS J. HEADLEE

became department head and upon retirement in 1944 was succeeded by Dr. Pepper.

Through the years the department has made important contributions in research and teaching. At the present time the following staffs are working on research problems as indicated: BYRLEY F. DRIGGERS (fruit insects), ROBERT S. FILMER (grassland insects, bees, ecology of economic insects), ANDREW J. FORGASH (physiology of insecticide action), JOSEPH M. GINSBURG (insecticides), PHILIP GRANETT (insect repellents), LYLE E. HAGMANN (mosquitoes), CLYDE C. HAMILTON (insects of nursery and ornamental plants), ELTON J. HANSENS (insects affecting man and animals), MARTIN T. HUTCHINSON (insects of small fruits), DANIEL M. JOBBINS (mosquitoes), PHILIP E. MARUCCI (cranberry and blueberry insects), B. B. PEPPER (insecticide residues in soil), JOHN P. REED (vegetable insects, insect and insecticide contamination of fresh market and processing crops), JOHN B. SCHMITT (structural, household and stored product insects, insect morphology), and B. R. WILSON (insect contaminants in fresh and processed foods).

Thus a wide range of research projects is in progress dealing both with entomological problems in New Jersey and with basic problems of interest to the entire science.

Research findings and recommendations are carried to farmers and others by Dr. LELAND G. MERRILL, Extension Entomologist, with the close collaboration of the research and teaching personnel. This collaboration is imperative in New Jersey because of the diversified agriculture of the state and the very broad extension program in entomology. Dr. Merrill also assists the rest of the staff by bringing to their attention the needs of growers. The extension entomologist is in close contact with graduate students also and they have the benefit of his practical experience with entomological problems.

Teaching in the department falls into 3 categories, namely four-year students, graduate students and short course students. Undergraduate students interested in entomology take the "Preparation for Research" curriculum and take their elective courses in entomology. Their undergraduate training stresses

a strong background in the basic sciences in preparation for specialized training in graduate school. Undergraduates can enroll in general entomology, general morphology, and insect classification I and II taught by Dr. Schmitt. Other courses on the undergraduate level include economic entomology under Dr. Hamilton, apiculture taught by Mr. Filmer, insecticides taught by Dr. Ginsburg, and medical entomology and taxonomy of Diptera taught by Dr. Hansens. A special one-year course in economic entomology for students not specializing in entomology and available only for minor credit is taught by Dr. Pepper. Apiculture, general entomology, and Dr. Hamilton's economic entomology are not open to graduate students for credit.

For graduate students a wide range of courses is offered with emphasis on fundamental studies of insects. Dr. Schmitt has a profound interest in insect morphology and was trained under Dr. R. E. Snodgrass. He offers courses in insect embryology, advanced insect morphology, metamorphosis and development, histological techniques, and history of entomology. Courses in insect physiology and insect toxicology are taught jointly by Dr. Forgash and Dr. Hagmann in this expanding field in the department. Dr. Ginsburg also offers an advanced course in insecticides.

A full year's course in economic entomology is given by Dr. Pepper with the assistance of the entire staff. This course is directed particularly to the needs of graduate students preparing for work in economic entomology and stresses ecological aspects of economic entomology and techniques in entomological research. Coupled with this course is a unique offering titled "Field Methods in Economic Entomology" which is given in the summer and consists of actual laboratory trips on research problems with all members of the staff. A seminar on current entomological topics is required of all graduate students.

Two courses are offered in cooperation with other departments of the university. "Arthropods and Human Disease" is devoted to study of the relationships of arthropods in the cause and transmission of certain parasitic human diseases and is

taught by Dr. Hansens and Mr. Jobbins of the Department of Entomology and Dr. Leslie A. Stauber of the Zoology staff. The other such cooperative effort is taught by Dr. Hutchinson of Entomology and Dr. B. H. Davis of the Plant Pathology Department and is titled "Plant Viruses and Their Insect Vectors."

Training at Rutgers is directed toward economic entomology and to that end all research personnel have teaching assignments and all research facilities are available for class work.

In addition to essential class rooms and offices the facilities include insecticide and physiology laboratories, air-conditioned rearing and testing rooms, and a sizeable greenhouse with attached laboratory facilities including spraying and dusting rooms. Recently a radioactive tracer laboratory has been equipped. The department is well supplied with sprayers, dusters, mist blowers, etc. for use in field research and instruction.

The entomological museum is strongest in the Coleoptera (Borner collection) and Lepidoptera (Rindge collection and the Comstock collection of butterflies). Recently much new material in the parasitic orders has been added. The museum also includes the fine general collection of the late George W. Barber.

The entomological library is a branch of the main Rutgers Library and includes nearly all of the important entomological journals and a fine collection of books, as well as state and federal circulars and bulletins on entomology. The department is fortunate in having the literature immediately available for use of students and staff. Other branches of the Rutgers Library are easily available as well as outstanding libraries at Princeton and in New York City.

Situated as it is on main travel routes between the largest cities on the eastern seaboard the Entomology Department at Rutgers affords students and staff with maximum availability to a wide range of industrial and research organizations but also close contact with the up-to-date agriculture of "The Garden State."—Elton J. Hansens.

Review

PUPPEN TERRICOLER DIPTERENLARVEN, by Adolph Brauns. Pp. 156, 67 figures, 8 photographs, 1 diagram. "Musterschmidt" Wissenschaftlicher Verlag, Göttingen, 1954. Price, DM 24.80.

This volume is a companion to the previously reviewed (ENT. NEWS, Vol. 66, pp. 26–27. 1955) "Terricole Dipternlarven" by the same author. The format of the earlier volume is used again and, in the opinion of the reviewer, with equal success.

The condensation of the extensive but scattered literature on the terrestrial pupae of Diptera into a usable handbook is in itself no mean achievement. Although most of the literature on non-European forms is ignored, the relationship of the Nearctic and Palaearctic forms is close enough so that the book may be used by American workers with confidence, at least at the family level, and probably for genera as well.

Each family is discussed in detail and each family bears the same number as in the volume on larvae; a feature which makes for quick cross reference between the two books without the necessity of using the index. Again the style is terse and the information relatively easy to understand. More emphasis seems to be placed on descriptions of representative genera and species than in the previous volume. Throughout the text the author scrupulously refers to the sources of his information, making it possible for the user to refer to the original on any particular point under discussion.

The greater portion of the book consists of pupal keys to family, and a discussion of the families and representative genera. Other chapters are brief and cover characters used in classification, taxonomic position of major groups, and ecology. The last two chapters are of general interest since they include a brief discussion and classification of the pupae of the major orders of insects.

The author has again accomplished the difficult task of providing a basic work on which the specialized student can depend and use as a starting point for his own researches in the field. For the general worker it is an excellent handbook for determination of the pupae of Diptera to the family level. The figures, many of which are original, are excellent.—L. L. PECHUMAN.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Cynipid and Itonidid galls—American species wanted; purchase or exchange for British species. Fresh or dried. D. Leatherdale, F.R.E.S., Old Woodstock, Oxford, England.

Wanted—Reprints or papers concerning insects taken in Alaska for inclusion in list of Alaskan insects. R. H. Washburn, Alaska Experiment Station, Palmer, Alaska.

Conopidae of the World wanted. Will pay 10¢ to $1.00 for pinned and labelled specimens. S. Camras, 4407 N. Milwaukee Ave., Chicago 30, Illinois.

Anisoptera—Nearctic sp. wanted for exchange, espec. Ophiog., Arigom., Aeschna, Neurocor., Somatoc., Cordulia, Dorocor., Leucor. R. D. Cuyler, Dept. of Entomology, N. C. State College, Raleigh, N. C.

Bembicini and Stizini (Hym., Sphec.) of New World wanted for revis. study. Will return upon request or at end of project. James E. Gillaspy, Dept. of Zoology, Univ. Texas, Austin 12, Texas.

Agapema galbina. Will exchange cocoons of this moth for nature books. E. Frizzell, Route 4, Box 96, San Benito, Texas.

Wanted—Data on exact location of colonies of *Epibembex* (olim *Bembix*) (Hymenoptera), any species, any part of country, for biological studies. Howard E. Evans, Dept. Entomology, Cornell Univ., Ithaca, N. Y.

Fanniinae wanted on loan (nearctic and holarctic), and information on collections. James G. Chillcott, Dept. Entom., Univ. of Kansas, Lawrence, Kan. (Loans may be charged to Dr. C. D. Michener.)

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